



ISO 527-1/-2

ISO 178

ISO 899-1 ISO 179/1eU

Hytrel® 3078

THERMOPLASTIC POLYESTER ELASTOMER

Common features of Hytrel® thermoplastic polyester elastomer include mechanical and physical properties such as exceptional toughness and resilience, high resistance to creep, impact and flex fatigue, flexibility at low temperatures and good retention of properties at elevated temperatures. In addition, it resists many industrial chemicals, oils and solvents. Special grades include heat stabilised, flame retardant, food contact compliant, blow molding and extrusion grades. Concentrates offered include black pigments, UV protection additives, heat stabilisers, and flame retardants. Hytrel® thermoplastic polyester elastomer is plasticiser free.

The good melt stability of Hytrel® thermoplastic polyester elastomer normally enables the recycling of properly handled production waste. If recycling is not possible, we recommend, as the preferred option, incineration with energy recovery (-24 kJ/g of base polymer) in appropriately equipped installations.

For disposal, local regulations have to be observed.

Hytrel® thermoplastic polyester elastomer typically is used in demanding applications in the automotive, fluid power, electrical/electronic, consumer goods, appliance and power tool, sporting goods, furniture, industrial and off-road transportation/equipment industry.

Hytrel® 3078 is a very low modulus grade, with nominal hardness of 30D. It contains non-discoloring stabilizer. It can be processed by many conventional thermoplastic processing techniques like injection molding and extrusion.

Food compliance:

Refer to Hytrel® 3078FG

Typical applications:

Compounding, extrusion, injection moulded and over-moulded parts for consumer use.

Product information

Tensile strain at break

Tensile creep modulus, 1000h

Charpy impact strength, 23°C

Flexural modulus

Resin Identification Part Marking Code	TPC-ET >TPC-ET<		ISO 1043 ISO 11469
Rheological properties			
Melt volume-flow rate Temperature Load	5 190 2.16	-	ISO 1133
Melt mass-flow rate Melt mass-flow rate, Temperature Melt mass-flow rate, Load		g/10min °C	ISO 1133
Moulding shrinkage, parallel Moulding shrinkage, normal	0.8 0.5	%	ISO 294-4, 2577 ISO 294-4, 2577
Typical mechanical properties			
Tensile modulus Stress at 10% strain Tensile stress at 50% strain, 1BA Tensile stress at break Nominal strain at break	1.8 5	MPa MPa MPa MPa %	ISO 527-1/-2 ISO 527-1/-2 ISO 527-1/-2 ISO 527-1/-2 ISO 527-1/-2

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>300 %

27 MPa

18 MPa

N kJ/m²





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Charpy impact strength, -30 °C Charpy notched impact strength, -30 °C Charpy notched impact strength, -30 °C Charpy notched impact strength, -40 °C Izod notched impact strength, 23 °C Izod notched impact strength, -40 °C Poisson's ratio Brittleness temperature Shore D hardness, 15s Shore D hardness, max Tear strength, parallel Tear strength, normal [1]: measured on 1BA specimen pulled at 50mm/min	N N N N 0.5 -98 24 30 80	kJ/m² kJ/m² kJ/m² kJ/m² kJ/m² kJ/m² c C	ISO 179/1eU ISO 179/1eA ISO 179/1eA ISO 179/1eA ISO 180/1A ISO 180/1A ISO 974 ISO 48-4 / ISO 868 ISO 868 ISO 34-1 ISO 34-1
Thermal properties			
	170	0.0	100 11057 1/0
Melting temperature, 10°C/min	170 -61		ISO 11357-1/-3 ISO 6721
Glass transition temperature, 1 Hz Vicat softening temperature, 50°C/h 10N		°C	ISO 306
Coefficient of linear thermal expansion		E-6/K	ISO 306 ISO 11359-1/-2
(CLTE), parallel	177	L-0/1X	130 11339-1/-2
Coefficient of linear thermal expansion (CLTE),	206	E-6/K	ISO 11359-1/-2
normal	200	L 0/10	100 11003 1/ 2
Thermal conductivity of melt	0.15	W/(m K)	ISO 22007-2
Effective thermal diffusivity, flow	5.44E-8		ISO 22007-4
Specific heat capacity of melt		J/(kg K)	ISO 22007-4
RTI, electrical, 1.5mm		°C	UL 746B
RTI, electrical, 3.0mm		°C	UL 746B
RTI, impact, 1.5mm		°C	UL 746B
RTI, impact, 3.0mm		°C	UL 746B
RTI, strength, 1.5mm		°C	UL 746B
RTI, strength, 3.0mm		°C	UL 746B
-			
Flammability			
Burning Behav. at 1.5mm nom. thickn.		class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
UL recognition	yes		UL 94
Burning Behav. at thickness h		class	IEC 60695-11-10
Thickness tested	3	mm	IEC 60695-11-10
UL recognition	yes		UL 94
Oxygen index	19	%	ISO 4589-1/-2
FMVSS Class	В		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	33	mm/min	ISO 3795 (FMVSS 302)
Electrical properties			
Relative permittivity, 100Hz	5.4		IEC 62631-2-1
Relative permittivity, 1MHz	5.3		IEC 62631-2-1
Dissipation factor, 100Hz		E-4	IEC 62631-2-1
Dissipation factor, 1MHz	150		IEC 62631-2-1

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Volume resistivity	1E11 Ohm.m	IEC 62631-3-1
Surface resistivity	1E14 Ohm	IEC 62631-3-2
Electric strength	18 kV/mm	IEC 60243-1

Physical/Other properties

Humidity absorption, 2mm	0.2 %	Sim. to ISO 62
Water absorption, 2mm	0.8 %	Sim. to ISO 62
Water absorption, Immersion 24h	0.5 %	Sim. to ISO 62
Density	1070 kg/m³	ISO 1183
Density of melt	940 kg/m ³	

Injection

Drying Recommended	yes
Drying Temperature	80 °C
Drying Time, Dehumidified Dryer	2-3 h
Processing Moisture Content	≤0.08 %
Melt Temperature Optimum	200 °C
Min. melt temperature	190 °C
Max. melt temperature	210 °C
Mold Temperature Optimum	35 °C
Min. mould temperature	25 °C
Max. mould temperature	45 °C
Ejection temperature	85 °C

Extrusion

Drying Temperature	70 - 90	°C
Drying Time, Dehumidified Dryer	2 - 3	h
Processing Moisture Content	≤0.06	%
Melt Temperature Optimum	200	°C
Melt Temperature Range	190 - 205	°C

Characteristics

Processing Injection Moulding, Film Extrusion, Extrusion, Sheet Extrusion, Other Extrusion,

Coatable, Calendering, Casting, Thermoforming

Delivery form Pellets

Special characteristics Light stabilised or stable to light

Additional information

Profile extrusion PREPROCESSING

Drying temperature = 80°C

Drying time, dehumidified dryer = 2-3 h Processing moisture content = <0.06 %

PROCESSING

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Melt temperature optimum = 200 °C Melt temperature range = 190-205 °C

Automotive

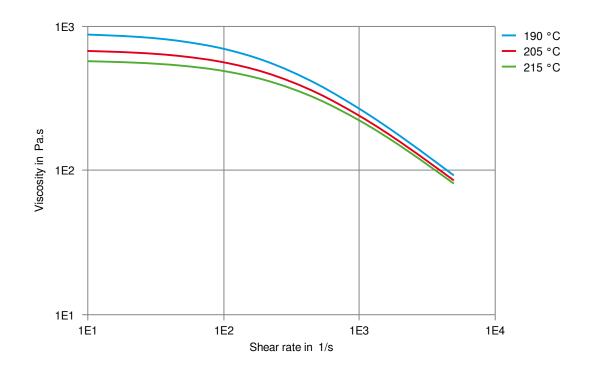
OEM

ADDITIONAL INFORMATION

General Motors

Part Specific Approval, Please Contact Your CE Representative For More Details.

Viscosity-shear rate



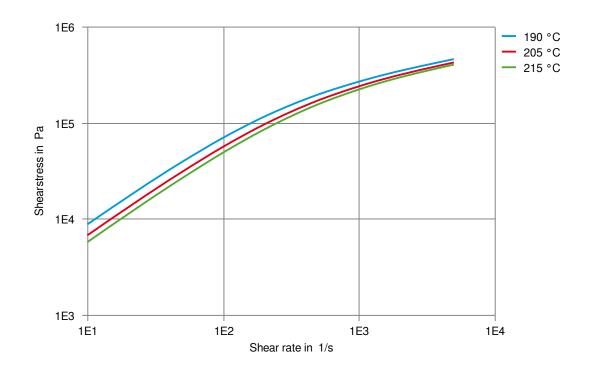
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Shearstress-shear rate



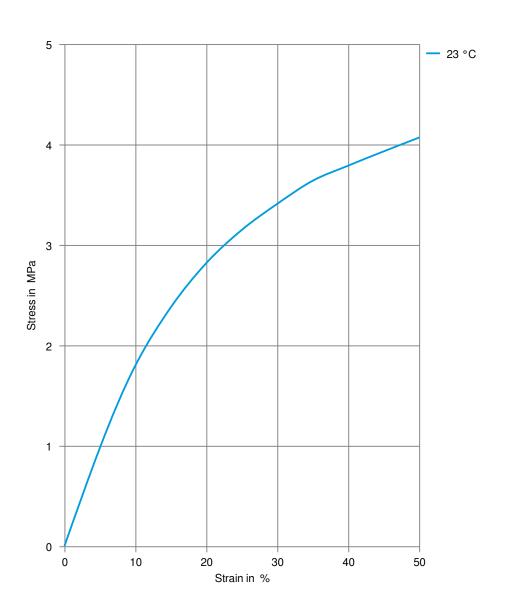
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Stress-strain



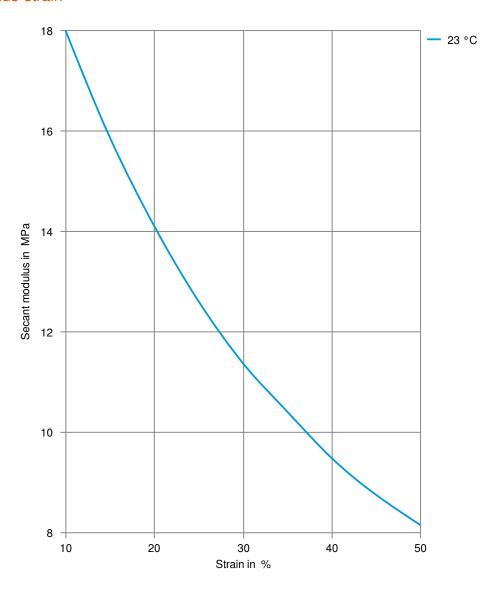
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Secant modulus-strain



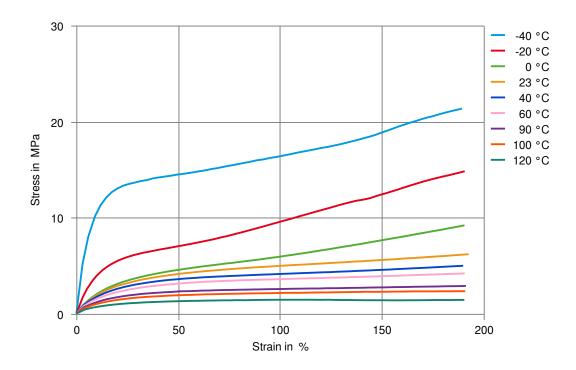
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Stress-Strain (Flexible Materials)



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Chemical Media Resistance

Acids

- ✓ Acetic Acid (5% by mass), 23°C
- ✓ Citric Acid solution (10% by mass), 23°C
- ✓ Lactic Acid (10% by mass), 23°C
- X Hydrochloric Acid (36% by mass), 23°C
- X Nitric Acid (40% by mass), 23°C
- X Sulfuric Acid (38% by mass), 23°C
- ✓ Sulfuric Acid (5% by mass), 23°C
- X Chromic Acid solution (40% by mass), 23°C

Bases

- ✓ Sodium Hydroxide solution (35% by mass), 23°C
- ✓ Sodium Hydroxide solution (1% by mass), 23°C
- ✓ Ammonium Hydroxide solution (10% by mass), 23°C

Alcohols

- ✓ Isopropyl alcohol, 23°C
- ✓ Methanol, 23°C
- ✓ Ethanol, 23°C

Hydrocarbons

- ✓ n-Hexane, 23°C
- ✓ Toluene, 23°C
- ✓ iso-Octane, 23°C

Ketones

X Acetone, 23°C

Ethers

X Diethyl ether, 23°C

Mineral oils

- ✓ SAE 10W40 multigrade motor oil, 23°C
- ★ SAE 10W40 multigrade motor oil, 130°C
- X SAE 80/90 hypoid-gear oil, 130 °C
- ✓ Insulating Oil, 23°C

Standard Fuels

- X ISO 1817 Liquid 1 E5, 60°C
- X ISO 1817 Liquid 2 M15E4, 60°C
- X ISO 1817 Liquid 3 M3E7, 60°C
- X ISO 1817 Liquid 4 M15, 60°C
- ✓ Standard fuel without alcohol (pref. ISO 1817 Liquid C), 23°C
- ✓ Standard fuel with alcohol (pref. ISO 1817 Liquid 4), 23°C
- ✓ Diesel fuel (pref. ISO 1817 Liquid F), 23°C
- ✓ Diesel fuel (pref. ISO 1817 Liquid F), 90°C
- ➤ Diesel fuel (pref. ISO 1817 Liquid F), >90°C

Salt solutions

- ✓ Sodium Chloride solution (10% by mass), 23°C
- ★ Sodium Hypochlorite solution (10% by mass), 23°C

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- ✓ Sodium Carbonate solution (20% by mass), 23°C
- ✓ Sodium Carbonate solution (2% by mass), 23°C
- ✓ Zinc Chloride solution (50% by mass), 23°C

Other

- ✓ Ethyl Acetate, 23°C
- X Hydrogen peroxide, 23°C
- X DOT No. 4 Brake fluid, 130°C
- ➤ Ethylene Glycol (50% by mass) in water, 108°C
- √ 1% nonylphenoxy-polyethyleneoxy ethanol in water, 23°C
- ✓ 50% Oleic acid + 50% Olive Oil, 23°C
- ✓ Water. 23°C
- ✓ Water, 90°C
- ✓ Phenol solution (5% by mass), 23°C

Symbols used:

✓ possibly resistant

Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).

x not recommended - see explanation

Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).

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NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colourants or other additives may cause significant variations in data values. Properties of moulded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any e

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